An Analysis of Growth, Performance and Instability of India's Exports during Pre–Reform and Reform Periods: A Sectorial Aspect

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Abstract: India has completed two and half decades of economic reforms. There are studies related to impact of reforms on India's foreign trade. Most of the studies have analyzed India's foreign trade as a whole and have not included services in specific. The present study is an attempt to evaluate the impact of reforms on India's exports in terms of value, share and growth rate in all the sectors namely agriculture, manufacturing and services. It has been observed that reforms accelerated exports of all sectors in terms of values. But in terms of percentage share, it is observed that there is an increasing trend in both services and manufacturing sectors whereas there is a decreasing trend in agriculture sector. The compound growth rate reveal that rate of growth was relatively high for all the sectors during reform periods. The instability index exposed that volatility was relatively high during reform periods for all sectors exports. The regression models with dummy variable confirmed that there is a significant positive influence of reform on total export.

Keywords: Compound Growth Rate, Instability Index, Regression model.

I. INTRODUCTION

Foreign trade has been one of the most significant determinants of economic development in a country. The foreign trade of a country consists of inward and outward movement of goods and services, which result into outflow and inflow of foreign exchange from one country to another country. In globalization era, international trade is a vital part of development strategy and it can be an effective instrument of economic growth, employment generation and poverty alleviation in an economy. The process of globalization has got momentum through the process of economic integration and in the expansion of the volume of international trade. In 1991, the government introduced some changes in its policy on trade, foreign investment, tariffs and taxes under the name of "New Economic Reforms". The main focus of these reforms has been on Liberalization, Openness and Export promotion activity. India's foreign trade export has significantly changed in the reform periods, the major contributor to exports growth has been the manufacturing sector and service sector.

India has completed two and half decades of economic reforms. The effect of liberalization on India's foreign trade has greatly influenced. The first important feature is changes in the structure of trade in goods and services. The some of agriculture products has declined mainly to the advantage of manufacturing products and services. Secondly, important change has also occurred during 1990s in India's direction of trade flows. India's foreign trade continuously increased. It has shown the position of export and import of Indian economy. It was 1.33 billion US $ 1960-61.But in 1980-81 export increased to 8.59 billion US$ and after economic reform in 1991-92 export went up with 17.6 billion US$ after that at present in 2016-2017 export is 276.55

billion US $. India's import also increased in time to time. In 1960-61 India's import was 2.3 billion US$ but in 1980 it increased with 14.86 billion US$. After economic reform in 1991-92 it increased with 20.4 billion US$. In 2016-17 import was 382.74 billion s US$. With this background, the present study is an attempt to evaluate the impact of reforms on India's exports in terms of value, share and growth rate in all the sectors namely agriculture, manufacturing and services. There are studies related to impact of reforms on India's foreign trade. Most of the studies have analyzed India's foreign trade as a whole and have not included services in specific to fill this gap the present study carried.

II. OBJECTIVES OF THE STUDY

India has completed two and half decades of economic reforms. It is needed to evaluate impact of reforms on India's Export. So the main objective of this study is to examine performance of India's exports in all sectors. The specific objectives set out for the study is to examine and document the performance of exports of all the sectors during pre-reform and reform periods.

III. HYPOTHESIS

The following hypothesis has been formulated base on the above objective.

The impact of economic reforms on India's export in all sectors is significantly positive.

IV. MATERIALS AND METHODS

The study is based on secondary data. The Data was collected fromReserve bank of India (dbie.rbi.org.in) website. The time series taken for this analysisfrom 1970-71 to 2013-14, from 2014-15 RBI has been restricted with two main heading, they are oil and non-oil export. So it is decided to conduct the study till 2013-14. The data were deflated by using WPI series collected from office of economics adviser website(eaindstry.nic.in).The following tools and test are used to find out the impact of reforms on India's exports in all sectors.

a) Compound Growth Rate:

This tool is used to measure and compare the growth rateof a variable during particular period time rate. The compound growth rate can be calculated by using the following formula.

$$Y_t = ab^t$$

Where, Yt = Value of Variable for the year t.

t = Time Variable (1, 2, n) for each year,a = Constant, b = (1+r)and r = Compound growth rate.

The log transformation of the above function is:

$$\ln y_t = \ln a + t \ln b + e_t$$

$$\ln b = \ln (1+r)$$

The compound growth rate in percentage (**CGR) = [antilog (lnb)-1]*100**

b) Instability Index:

The instability in variable can be measured by different methods, such as Standard Deviation, Co-efficient of variation, Cuddy Della Valle Index (CDI), etc. This study appliedCDI to measure instability in a variable. This index is most commonly used measure to find out instability in time series data. This was originally developed by Cuddy and Della Valle in 1978. This index is a better compared to CV, due to its in efficiency in adjustment with trend in time series data.So it is better method to calculate instability in time series data. The index can be calculated by using the following method.

I_x= SEE/y *100

Where I_x = Instability Index SEE = Standard error of the trend line estimates.

$\overline{y}$ = Average value of the time series data.

V. RESULT AND DISCUSSION

This section consists of analysis and interpretation of thedataon the exports of all the sectors from 1970-71 to 2013-14.It also presents testing of hypothesis. The table-1 explains the decadal value of exports and growth rate of all the sectors. It is observed from the table-1 and Figure-1there has been impressive increase in value of invisible receipt Rs.14110.92 billion during 2013-14 from the meager value Rs.5 billion.

**Table1: Decadal value and growth rate of India's Exports sector wise**

(Billion Rupees)

Year	Invisible Receipts	Decadal Growth rate	Manufacturing Export including Petroleum Products	Decadal Growth rate	Agriculture Export	Decadal Growth rate	Total	Decadal Growth rate
1970-71	5		8.2		4.82		20.36	
1980-81	56.81	91.20	33.65	75.63	17.34	72.20	113.59	82.08
1989-90	124.84	54.49	191.89	82.46	44.18	60.75	382.12	70.27
1999-00	1314.02	90.50	1248.1	84.63	235.25	81.22	2858.66	86.63
2009-10	7753.66	83.05	6553.06	80.95	810.56	70.98	15899.45	82.02
2013-14	14110.92	45.05	14546.51	54.95	2430.24	66.65	32085.96	50.44

Source: Handbook of statistics of Indian Economy, RBI

During 1970-71. The highest decadal growth rate for invisible receipt is observed at 91.20 per cent during 1970-71 to 1980-81, followed by 90.50 per cent during 1989-90 to 1999-2000.The lowest decadal growth rate and sudden fall also observed during 1980-81 to 1989-90 at 54.40 per cent.

There has been remarkable increase in value of manufacturing export Rs.14546.51billion during 2013-14 from the meager value of Rs.8.2 billion during 1970-71.The highest decadal growth rate formanufacturing export is observed at 84.63 per cent during 1989-90 to 1999-2000, followed by 82.46 per cent during1980-81 to 1989-90.The lowest decadal growth rate observed during 1980-81 to 1989-90 at 75.63 per cent.There has been remarkable increase in value of agriculture export Rs.2430.24 billion during 2013-14from the skimpy value of Rs.4.82 billion during 1970-71.The highest decadal growth rate foragriculture export is observed at 81.22 per cent during 1989-90 to 1999-2000, followed by 72.20 per cent during1970-71 to 1979-80.The lowest decadal growth rate observed during 1980-81 to 1989-90 at 60.75 per cent.There has been notable increase in total export of India Rs32085.96 billion during 2013-14 from the unknowable value of Rs.20.36 billion during 1970-71.The highest decadal growth rate fortotal export is observed at 86.63 per cent during 1989-90 to 1999-2000, followed by 82.08 per cent during 1970-71 to 1980-81.The lowest decadal growth rate is observed during 1980-81 to 1989-90 at 70.27 per cent.

Figure1: Trend of India's Exports sector wise
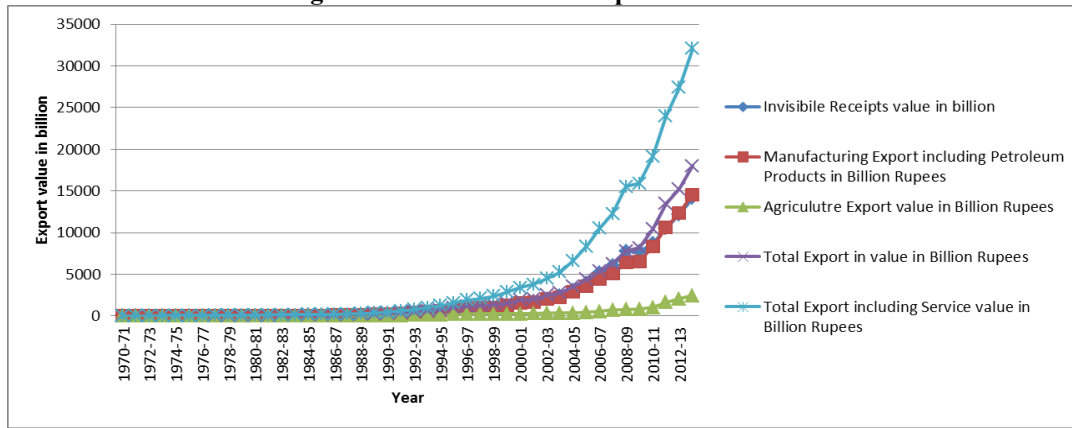
Source: Handbook of statistics of Indian Economy

There has been a common phenomena is observed from the table no-1 and figure no-1 is the export of all the sectors namely agriculture,manufacturing and services are accelerated during reform periods.Though the acceleration was started from 1990-91 in all the sectors the rate of increase was comparatively low for agriculture.

Figure2: Percentage share of India's Exports sector wise
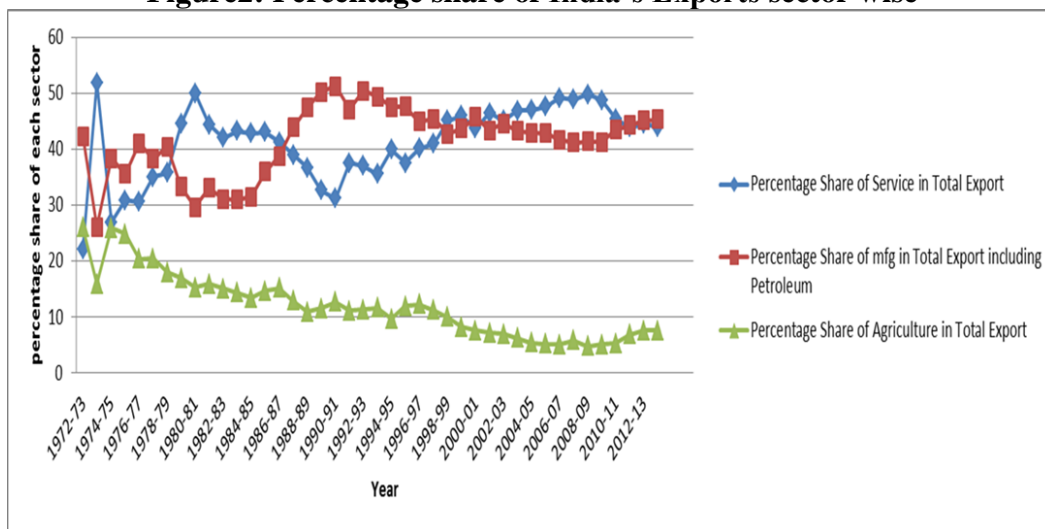
Source: Handbook of statistics of Indian Economy &Author calculation

Table no-2 shows the result of Compound Growth Rate for all sectors. The CGR computed from the results of log-linear regressions for the specified periods. It is expected that CGR for all the sectors have to increase as a result of comprehensive reform packages introduced in India during the reform period. The estimated result supported figure no-2 that is agriculture percentage share to total export deceleratingover the period of time .The CGR of agriculture exports for all periods have been low compared to manufacturing and services sector CGR which resulted in manufacturing and services sector export dominated agriculture export in the share of total export. It has been observed from the table no-2 the CGR of agriculture exports during 1970-71 to 2013-14 at 13.88 per cent which is lower compared to overall export 18.53 per cent during same period and it is substantially higher compared to pre-reform period CGR of agriculture export during 1970-71 to 1990-91 at 10.51 per cent.The CGR of agriculture exports during 1970-71 to 2013-14 at 13.88 per cent. There was a meager difference between the CGR of manufacturing exports and overall exports.

Table2: Compound Growth Rate of various sectors export based on Regression Result

period	Agriculture	Manufacturing	Services	Total
1970-71 to 2013-14	13.88	18.53	20.08	18.53
1970-71 to 1990-91	10.51	16.18	17.35	15.71
1991-92 to 2013-14	13.88	17.35	19.72	18.53

Source: Authors calculation by using SPSS

The same evidence observed that CGR of manufacturing exports during pre-reform period (16.18 per cent) and reform period (17.35). There was a substantial difference between the CGR of service exports and overall exports. The CGR of service exports was higher compared to the overall export CGR.It shows that services sector perform well during the period of research. The similar evidence observed that CGR of service exports during pre-reform period (17.35 per cent) and reform period (19.72 per cent).The CGR for overall export significantly high at 18.53 per cent during reform period compared to pre-reform period 15.71 per cent. In general, the implementation of reform has positive impact on growth rate of export all the sectors. The growth rate of agriculture export low compared to the manufacturing and services sectors which resulted in decrease of agriculture contribution to total export. Deceleration in agriculture exports growth rate can be explain by exclusive promotionalpolices for manufactured exports while the agriculture exports received little incentivecomparatively. The services export CGR confirmed that the remarkable performance of the sector wish possible due to availability of low cost manpower in India.

The instability in export can be measured by different methods. Such as Standard Deviation, Co-efficient of variation, Cuddy Della Valle Index (CDI), etc. This study applied Cuddy Della Valle Index to measure instability in export. This index is most commonly used measure to find out instability in time series data. This was originally developed by cuddy and Della Valle in 1978. This index is a better compared to CV, due to its in efficiency in adjustment with trend in time series data. So it is better method to calculate instability in time series data.

Table3: Instability Index of various sectors export

period	Agriculture	Manufacturing	Services	Total
1970-71 to 2013-14	1.41	1.33	1.28	1.31
1970-71 to 1990-91	0.71	1.92	0.57	1.08
1991-92 to 2013-14	2.00	1.57	1.31	1.44

Source: Instability Index calculated by using the given formula for specified periods

It is observed from the above table the instability of agriculture export was significantly high during reform period at 2 per cent compared to pre-reform period at 0.71 per cent. It express that the trade liberalization leads to high volatility in agriculture exports. It can also explained by nature of the goods that is the agriculture export is subject to productivity, nature performance, consumption for internal citizen. The instability of manufacturing export was relatively low during reform period at 1.57 per cent whereas pre-reform period at 0.71 per cent. It express that the trade liberalization leads to low volatility in manufacturing exports and it is inferred that the manufacturing sector have technology to meet the world player and also the world player invested notable amount as Foreign Direct Investment (FDI) in manufacturing sector .There was a significant difference the volatility of services sector during reform period at 1.31 per cent whereas during pre-reform period at 0.57 per cent. It shows that trade liberalization accelerated the mobility of labour among the countries so that there was a high volatility in services sector for taking the manpower among the developed nations. Inshort, the instability of total export during reform period insignificant high at 1.44 per cent relatively to 1.08 per cent during pre-reform period.

VI. HYPOTHESIS TESTING

The dummy variable regression model is an alternative for chow test to test the significant change of the intercept and slope of the model. It also revealed that whether reform influence the export by way of shifting the intercept and slope. Here, I have listed the result of regression model by using dummy variable

$\ln \bar{Y} = 1.76 + 0.16 \text{ time} - 0.471D + 0.025 \text{ CD}$

(0.000) (0.00)   (0.050)   (0.050) $R^2 = 0.99$ ----------- Model 1

$\bar{Y} = \ln\text{invisible Export}, D = \text{Dummy Variable}, CD = \text{Interaction of Dummy and Time}$

$\ln X = \overline{1.956} + 0.152 \text{ time} + 0.29D + 0.025 \text{ CD}$

(0.000)   (0.000)   (0.183)   (0.165) $R^2 = 0.99$ ------------- Model 2

$X\square$ = lnmanufacturingExport, D= Dummy Variable, CD = Interaction of Dummy and Time

$$\ln \overline{Z} = 1.678 + 0.105 \text{ time} - 0.437D + 0.036 \text{ CD}$$
(0.000)   (0.000)   (0.056)   (0.001) $R^2 = 0.98$-------------- Model 1 3

$\overline{Z}$ = lnagriculture Export, D = Dummy Variable and CD = Interaction of Dummy and Time

$$\ln \overline{T} = 3.011 + 0.146 \text{ time} - 0.449D + 0.033 \text{ CD}$$
(0.000)   (0.000)   (0.004)   (0.000) $R^2 = 0.98$--------------Model 4

Log $\overline{T}$ = Total Export,D = Dummy Variable and CD = Interaction of Dummy and Time

Model -1 explain the relationship between time and log value of Agriculture Export. In this model p-value are given in parenthesis. The intercept and slop values are significant at 5 per cent significant level. It explained that the reform does not shift the intercept and slop. It inferred that, though reform has accelerated the export. It doesn't increase the export level in significant level. Model -2 explain the relationship between time and log value of Manufacturing Export. In this model p-values are given in parenthesis. The intercept and slop values are significant at 5 per cent intercept dummy and dummy for slop insignificant at 5 percent significant level. It exposed that Manufacturing Export does not influenced by reform at 5 percent significant level. Model 3 explain the relationship between time and log value of agriculture Export. The intercept, slop values and interaction dummy co-efficient are significant at 5 per cent level. At the same time the co-efficient for year dummy is insignificant. So it revealed that reform has considerable effect on export of agriculture at 5 per cent significant level. Overall, the total export has influence by reform at 5 per cent significant level which explained in Model -4. The intercept, slop ,intercept dummy and slop dummy are significant at 5 per cent significant level .It inferred that there is a positive impact of reform on total export of India rather that sector wise.

VII. SUMMARY

It is clear from the result and discussion the reform has positive impact on all the sectors but it does not significantly influence the export in all the sectors whereas significantly influence in total export. The contribution of agriculture exports in share of total export decelerated over the period of time. It shows that the agriculture sector export dominated by manufacturing and services sectors.Deceleration in agriculture exports growth rate can be explain by exclusive promotional polices for manufactured exports while the agriculture exports received little incentive comparatively. The services export CGR confirmed that the remarkable performance of the sector wish possible due to availability of low cost manpower in India. The study also revealed that trade liberalization accelerated the mobility of labour among the countries so that there was a high volatility in services sector for taking the manpower among the developed nations.The Indian government needs to take some effective steps to increase it agriculture export in the coming time. Only then India will be succeeded in achieving higher share in agriculture export. Though the manufacturing and services sectors are performed well compared to the agriculture export still India have not utilized full potential and opportunity available in the world marked which confirmed by regression analysis by using dummy variable models. So policy makers could focus on all the sectors to improve overall performance export of India.

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